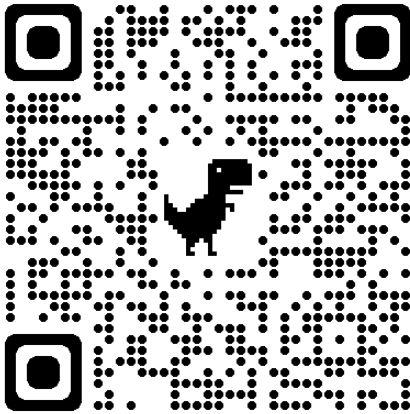




CHEST/VASCULAR MOCK OSCER 1



<https://radiopaedia.org/play/eb85f6a12776f249bb91faded68f1ddf>

Notes:

- The rubrics have been written by a single author and they are her perceptions only.
- Some questions will have more marks allocated in the rubric than the total for the question. For these, marks can be allocated up to the cap with no additional marks thereafter. E.g. if a question is worth 1 mark, and there are three 0.5 mark components in the rubric, the candidate can only be awarded a maximum of 1 mark for the question.
- The spread of marks for this examination is (RANZCR recommendation in brackets):
 - Observation: 25% (25%)
 - Interpretation: 27.5% (30%)
 - Management: 17.5% (15%)
 - Pathology: 15% (15%)
 - Anatomy: 5% (5%)
 - AIT/Safety: 5% (5%)
 - Intrinsic Roles: 5% (5%)



CASE 1

QUESTION 1 (OBSERVATION)	
What are the salient imaging findings? (2 marks)	<ul style="list-style-type: none"> • Large mass-like opacity in the left mid-lower hemithorax (0.5) • Spanning from anterior to posterior mediastinum (0.5) • Calcification in the mass (0.5) • Scoliosis (0.5)
QUESTION 2 (INTERPRETATION)	
What are your top three differential diagnoses, and which one do you favour? (2 marks)	<ul style="list-style-type: none"> • Anterior mediastinal teratoma (0.5 for DDx, 0.5 for favoured DDx) • Lymphoma (0.5) • Thymic neoplasm (0.5)
QUESTION 3 (INTERPRETATION)	
Briefly describe the features of a mature mediastinal teratoma you would expect to see on CT. (2 marks)	<ul style="list-style-type: none"> • Anterior mediastinal mass, can be large (0.5) • Different soft tissue densities (fat, calcification, cystic, soft tissue) (1) • Displacing rather than invading adjacent structures (0.5)
QUESTION 4 (MANAGEMENT)	
CT confirms an anterior mediastinal mass containing fat and calcification. What further management steps would you recommend? (1 mark)	<ul style="list-style-type: none"> • Cardiothoracic surgery review (1) • Thoracic oncology MDT (0.5) • Optional MRI, FDG PET/CT or biopsy (0.5 if these are only management options)
QUESTION 5 (PATHOLOGY)	
Outline the pathology of mediastinal teratoma (3 marks)	<ul style="list-style-type: none"> • Germ cell tumour (0.5) arising from ectopic stem cells (0.5) • Elements from all three embryological layers: endoderm, mesoderm and ectoderm (1) • Can be: mature, immature or malignant (0.5) with variable malignant potential but low incidence of malignant transformation (0.5)
COMMENTS	



CASE 2

QUESTION 1 (OBSERVATION)	
Describe the salient imaging findings. (3 marks)	<ul style="list-style-type: none"> • Widespread cysts (1) – no marks for ‘emphysema’ • No zonal predominance (0.5) • Relatively uniform or rounded shape (0.5) • Fat containing lesions in both kidneys (0.5) and the liver (0.5) (AMLs)
QUESTION 2 (INTERPRETATION)	
What is the most likely diagnosis for the lung findings, and the patient’s overall condition? (2 marks)	<ul style="list-style-type: none"> • Lymphangiomyomatosis (1) • Tuberous sclerosis (1)
QUESTION 3 (MANAGEMENT)	
What additional imaging study would you recommend? (1 mark)	<ul style="list-style-type: none"> • MRI brain (1)
QUESTION 4 (PATHOLOGY)	
Outline the difference between pulmonary cysts vs emphysema (2 marks)	<ul style="list-style-type: none"> • Cysts: have a thin wall (1) • Emphysema: usually don’t have a wall and have a central vessel/abnormal permanent enlargement of airspaces (1)
QUESTION 5 (PATHOLOGY)	
Briefly describe the manifestations of tuberous sclerosis in the thorax. (2 marks)	<ul style="list-style-type: none"> • Lymphangiomyomatosis (0.5) <ul style="list-style-type: none"> ○ Chylothorax (0.5) • Multifocal micronodular pneumocyte hyperplasia (MMPH) (0.5) • Cardiac rhabdomyomas (0.5) • Vascular or thoracic duct aneurysm (0.5) • Myocardial fatty foci (0.5)
COMMENTS	



CASE 3

QUESTION 1 (OBSERVATION)	
Describe the key findings on this CXR? (2 marks)	<ul style="list-style-type: none"> • Decreased cardiothoracic ratio and paucity of fat/subcutaneous tissue (0.5) • Lucency in the left upper quadrant outlining the splenic flexure (1) • NG tube projected appropriately (0.5)
QUESTION 2 (INTERPRETATION)	
What is the major diagnosis and what could the patient's underlying condition be? (2 mark)	<ul style="list-style-type: none"> • Pneumoretroperitoneum (1) <ul style="list-style-type: none"> ○ No marks for pneumoperitoneum • Anorexia nervosa (1)
QUESTION 3 (MANAGEMENT)	
What is the next management step? (1 mark)	<ul style="list-style-type: none"> • CT abdomen and pelvis (0.5) with oral & IV contrast (0.5)
QUESTION 4 (INTERPRETATION)	
There was no history of trauma and the pneumoretroperitoneum was an incidental finding. What may have caused it in this case? (1 mark)	<ul style="list-style-type: none"> • Underweight/malnutrition with spontaneous perforation of a retroperitoneal viscera (1) • NG tube should not produce pneumoretroperitoneum
QUESTION 5 (INTRINSIC ROLES)	
The patient removes her NG tube and the team ask you to re-site it under fluoroscopy. She is being managed for anorexia nervosa, When the patient arrives, she tells you she does not consent to you performing the procedure. How do you approach this? (4 marks)	<ul style="list-style-type: none"> • Attend the patient (0.5) • Discuss her concerns and the procedure (0.5) • Reasonable attempt to gain patient consent (0.5) • Offer/engage a support person (0.5) • Discuss with the treating team (1) and clarify the voluntary/involuntary status and capacity to consent (0.5) • If to proceed and the patient is considered an involuntary patient under the <i>Mental Health Act</i>, needs written authorisation from an authorised medical officer (0.5) and be considered emergent (0.5) – involve NOK or designated care provider (0.5)
COMMENTS	



CASE 4

QUESTION 1 (OBSERVATION)	
Describe the salient abnormalities on the HRCT. (3 marks)	<ul style="list-style-type: none"> • Innumerable micronodules (1) • Perilymphatic distribution (1) • Upper-mid zone predominance (0.5) • No air-trapping (0.5)
QUESTION 2 (INTERPRETATION)	
What is the most likely diagnosis and differential diagnosis? (2 marks)	<ul style="list-style-type: none"> • Most likely diagnosis sarcoidosis (1) • Pneumoconiosis e.g. silicosis (1)
QUESTION 3 (MANAGEMENT)	
Sarcoidosis is suspected. What management recommendations would you make? (2 marks)	<ul style="list-style-type: none"> • Respiratory review (1) • Interstitial lung disease MDT referral (1) • Comparison with previous imaging (0.5) • Correlation with ACE levels (0.5)
QUESTION 4 (ANATOMY)	
Describe the anatomy of the pulmonary lymphatics. (3 marks)	<ul style="list-style-type: none"> • Intralobular – around the bronchovascular bundle (1) • Interlobular – within the interlobular septa (1) • Lymph nodes – intrapulmonary/perifissural (0.5), lobar, hilar to mediastinum (0.5)
COMMENTS	



CASE 5

QUESTION 1 (OBSERVATION)	
Describe the key imaging findings on the inspiratory and expiratory series. (3 marks)	<ul style="list-style-type: none"> • Mosaic attenuation on both inspiratory and expiratory (0.5) • Air trapping (0.5) • Ground glass (0.5) centrilobular nodules (0.5) • Upper mid-zone distribution (0.5) <ul style="list-style-type: none"> ○ Sparing the apices and lung bases (0.5) • No evidence of fibrosis (0.5)
QUESTION 2 (INTERPRETATION)	
What is the diagnosis and why? (2 marks)	<ul style="list-style-type: none"> • Non-fibrotic (0.5) hypersensitivity pneumonitis (0.5) • Justification based on criteria for diagnosis of HP: <ul style="list-style-type: none"> ○ No fibrosis (0.5) ○ Parenchymal abnormalities & small airways disease (0.5) ○ Air-trapping (0.5)
QUESTION 3 (MANAGEMENT)	
Hypersensitivity pneumonitis is suspected. List 4 risk factors the patient may have in their medical record (2 marks)	<ul style="list-style-type: none"> • 0.5 for each correct antigen (there are over 200) e.g. <ul style="list-style-type: none"> ○ Proteins – animals (including birds) or plants ○ Microbes – fungi/mould, yeast, mites ○ Inorganic particulates – chemicals, pharmaceuticals, metals
QUESTION 4 (AIT/SAFETY)	
Describe the standard protocol for an HRCT chest for interstitial lung disease, justifying the phases, reconstructions and contrast requirements. (3 marks)	<ul style="list-style-type: none"> • Inspiratory, expiratory and prone acquisitions (0.5) <ul style="list-style-type: none"> ○ Expiratory for air trapping (0.5) ○ Prone for atelectasis (0.5) • Non contrast (0.5) – better visualisation of the inter/intralobular septa (0.5) • Hi-resolution reformats/1 in 10/sharpening (0.5) for spatial resolution/visualisation of small structures (0.5)
COMMENTS	



CASE 6

QUESTION 1 (OBSERVATION)	
What are the salient imaging findings? (3 marks)	<p>Large left pleural effusion (0.5)</p> <p>Partial dependent collapse of the left lung (0.5)</p> <p>Thickening of the left hemidiaphragm (0.5)</p> <p>Soft tissue masses in the lower left hemithorax (0.5)</p> <p>Nodular pleural thickening of the mid-upper parietal pleura (0.5)</p> <p>No lung masses or lymphadenopathy (0.5)</p>
QUESTION 2 (INTERPRETATION)	
What are the differential diagnoses? (2 marks)	<p>Mesothelioma (1)</p> <p>Metastases (1)</p>
QUESTION 3 (MANAGEMENT)	
How would you recommend obtaining a histopathological diagnosis? (2 marks)	<ul style="list-style-type: none"> • Pleural tap (0.5) – ultrasound or CT guided (0.5) • CT guided biopsy of a pleural mass (1)
QUESTION 4 (PATHOLOGY)	
Is smoking a risk factor for mesothelioma? (1 mark)	<ul style="list-style-type: none"> • No (1)
QUESTION 5 (INTERPRETATION)	
Besides mesothelioma, briefly outline how asbestos exposure can manifest in the thorax on CT. (2 marks)	<ul style="list-style-type: none"> • Pleural plaques with calcification (0.5) • Interstitial lung disease (asbestosis) – honeycombing (0.5) • Round atelectasis (0.5) • Lung cancer (0.5)
COMMENTS	



CASE 7

QUESTION 1 (OBSERVATION)	
Describe the imaging findings. (2 marks)	<ul style="list-style-type: none"> • Bilateral consolidation (0.5) • Perihilar upper mid zones (0.5) • Possible cysts within (0.5) • Pleural spaces clear (0.5)
QUESTION 2 (INTERPRETATION)	
What are the top three differential diagnoses? (2 marks)	<ul style="list-style-type: none"> • Fungal infection – pneumocystis (1), aspergillus (0.5) • Viral pneumonitis (0.5) • Tuberculosis/mycobacterial infection (0.5) • Inflammatory pneumonitis/lung injury (0.5)
QUESTION 3 (MANAGEMENT)	
What investigations would you suggest based on this CXR? (2 marks)	<ul style="list-style-type: none"> • HRCT chest (1) – (0.5 for CT chest or CT chest with contrast) • Respiratory review (0.5) • Bronchial lavage (1) • Sputum cultures (0.5)
QUESTION 4 (PATHOLOGY)	
Define an opportunistic infection. (1 mark)	<ul style="list-style-type: none"> • Definition - loss of normal innate/adaptive immune responses allows an organism that is normally weakly virulent to cause infection/disease (1)
QUESTION 5 (PATHOLOGY)	
Name a fungal pathogen that can cause opportunistic infection besides PJP. Describe its manifestations in the lungs in immunosuppressed patients. (3 marks)	<ul style="list-style-type: none"> • Correct identification (1), imaging findings (2) • Aspergillus (angioinvasive aspergillosis): multiple pulmonary nodules/masses, masses with halos of haemorrhage from invasion of the blood vessels, infarcts, cavitation • Candida: pneumonia pattern, broncho or lobar pneumonia • Cryptococcus: lung nodules or masses, may cavitate, variable consolidation, lymphadenopathy and effusions
COMMENTS	



CASE 8

QUESTION 1 (OBSERVATION)	
What are the salient imaging findings? (2 marks)	<ul style="list-style-type: none"> • Aortic wall thickening (0.5) extending to the great vessels (0.5) • High density intramural haematoma on non-contrast (0.5) • Small outpouching of the lumen in the ascending aorta (0.5)
QUESTION 2 (INTERPRETATION)	
What is the diagnosis and its implication? (3 marks)	<ul style="list-style-type: none"> • Intramural haematoma (1) • Penetrating ulcer (1) • Life-threatening (1)
QUESTION 3 (MANAGEMENT)	
How would you manage these findings at the time of reporting? (3 marks)	<ul style="list-style-type: none"> • Urgent call to the referring team (1) • Arrange supervision/support for transfer e.g. nurse escort (1) • Recommend urgent cardiothoracic surgery review (1)
QUESTION 4 (ANATOMY)	
Which vascular structures supply the outer layer of the aortic media? (1 mark)	<ul style="list-style-type: none"> • Vasa vasorum (1)
QUESTION 5 (AIT/SAFETY)	
The patient undergoes a graft repair of the aorta, representing one year post op with fevers. Which PET radiopharmaceutical could be used to assess for perigraft infection? (1 mark)	<ul style="list-style-type: none"> • F18-FDG (1)/fluorodexoyglucose <ul style="list-style-type: none"> ○ 0.5 for FDG
COMMENTS	